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ABSTRACT

An apparatus and method for measuring pollutants in a vehicle exhaust by remotely sensing hydrocarbons and nitric oxide using ultraviolet light, and measuring carbon dioxide and other pollutants using infrared light. A collimated beam of ultraviolet and a near-infrared light is propagated across the road through the exhaust plume of a vehicle. After the light beam has passed through the exhaust, a retroreflector reflects the light beam back. A beam splitter passes the infrared light to an infrared detector and deflects the ultraviolet light to an ultraviolet spectrometer. The ultraviolet spectrometer produces ultraviolet signals representative of the amount of hydrocarbons and nitric oxide in the vehicle exhaust. The infrared detector produces an infrared signal representative of the amount of carbon dioxide and other pollutants in the exhaust plume. The spectrometer and detector send the respective signals to a processor for calculation of the amounts of pollutants in the exhaust. A camera is used to take a picture of the license plate of a vehicle that emits too many pollutants.

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